

CENTER FOR SOLID OXIDE FUEL CELL TECHNOLOGY

CENTER

Established in 1996, the main focus of the Center is to develop solid oxide fuel cell (SOFC) technology for the direct conversion of chemical energy of a variety of fuels, such as natural or coal gas and other reformed logistic fuels, into electricity at a very high efficiency. Initially, the Center is developing cell stack technology for a 2 to 5 kilowatt unit, which has many potential applications with emphasis on distributed power for residential and remote locations for on-demand electrical power that is clean, efficient, reliable, and noise-free.

TECHNOLOGY

The Center technologies are based on the design and fabrication of novel, anode-supported solid oxide fuel cells with highly efficient electrodes that have a very low resistance. This concept makes it possible to develop a cost-effective, compact power unit for direct conversion of chemical energy of fuels into electricity for remote and residential applications.

ACCOMPLISHMENTS

Fuel cells that operate at lower temperatures (650 – 800°C) but higher efficiency are being developed. The Center has been successful in attracting research and development grants from federal agencies as well as the Electric Power Research Institute (EPRI) and the Gas Research Institute (GRI). A low cost process for the fabrication of corrugated anode cell structure has been developed which allows the stacking of 4 to 6 cells. A consortium has been formed between University of Utah, EPRI, GRI and MSRI to pool the intellectual property of the partners to facilitate commercialization. MSRI was successful in receiving an ATP-NIST award for \$3 million and the Center has received a subcontract from MSRI. The Center has filed four new patent applications.

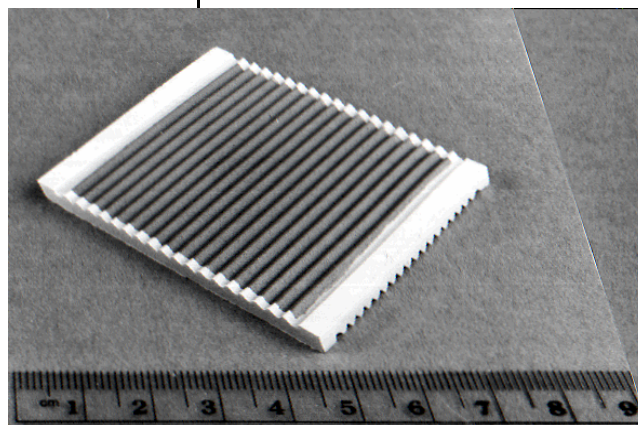
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Can You I imagine...

... a portable generator you can take on your next camping trip that efficiently converts propane directly to electricity with no flame, no moving parts, no noise, and only water vapor as an exhaust pollutant?

THE CENTER EXPLORES
COMMERCIALLY VIABLE METHODS OF
CONVERTING GASEOUS FUELS
DIRECTLY INTO ELECTRICITY USING
HIGH EFFICIENT FUEL CELL
TECHNOLOGIES.



- Photo of a 5cm x 5cm solid oxide fuel cell (SOFC) made by the center. The corrugations for the flow of fuel (e.g. natural gas) and oxidant (e.g. air) are in a cross-flow arrangement. The dark top surface is the cathode. SOFCs such as these are currently being configured into a stack. The objective is to construct a 2 to 5 kW stack for residential applications. The SOFC system will convert chemical energy of a variety of fuels into electricity.